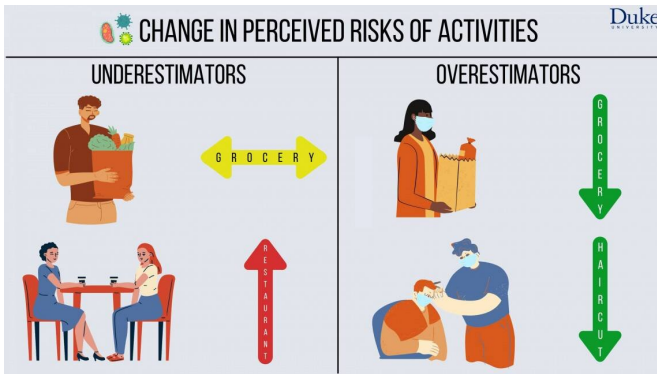


# Imagination exercise helps people get a grip on real pandemic risks

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An imagination exercise can help people make more realistic judgments about the risks of their everyday activities. Underestimators of risk and overestimators changed their views to be more in line with actual risks. Credit: Dallas Clemons

Combining local and very real risk statistics for SARS-CoV-2 infection with an exercise in imagination helped participants in a Duke University psychology study make more realistic decisions about their own risky behaviors, according a pair of new papers.

Study participants from all over the country who had dismissed their risks of Covid-19 and those who had perhaps over-responded to the danger both rethought their personal decisions after going through the imagination exercise. Three weeks later, their attitude adjustments still held.

The experimental intervention is now being integrated into a publicly accessible data dashboard through a collaboration between the Duke team and scientists at Georgia Tech University. The project is funded by the Centers for Disease Control and Prevention to see if it could help more people properly calibrate their risks and behaviors during the pandemic.

The studies, which appear this week in the *Proceedings of the National Academy of Sciences* and *Nature Aging*, drew on established science about memory and decision-making.

The researchers sought to design an intervention that would help people more accurately gage the risks they face from the Covid virus while engaging in their typical local activities, such as going to the gym or getting their hair cut.

"We started with this idea that it's important to have an accurate understanding of risk in our own local communities," said Allie Sinclair, a graduate student in psychology and neuroscience at Duke University, who led the research. "Underestimating risk is of course bad for [public health](#) because we can do risky things and put ourselves and others in danger. But at the same time, overestimating risk is not good either," because curling up in a ball at home can be hard on one's mental health and financial well-being.

The researchers started the experiment by asking 300 American study participants — who were recruited and tested over the Internet—to gage the local risks they faced doing 15 potentially risky everyday activities like grocery shopping or getting a haircut during the [pandemic](#). In general, their perceptions were not in line with their local statistics, and their attitudes toward the local risks tracked closely with how well they were following public health guidance.

In a second study, the psychologists tried to change the way a different group of 735 Americans felt about their real risks.

The first part of this intervention was called the imagination exercise. A quarter of participants were asked to imagine hosting a dinner party in their home with their friends and family and to name the people who would be there. During the party, somebody coughs at the table, and then three days

later is found to be positive for Covid-19. So the host would have to call all of the dinner party guests and tell them to get tested.

"By using real people you know in the imagination exercise, it's designed to make you imagine what it would be like to experience the bad outcome of a risky decision," Sinclair said.

Another quarter of participants was given the same scenario, but happening to an imagined stranger and their friends. The third condition was a story about a family of rabbits eating some produce that had gone a bit bad and feeling ill afterwards. The fourth condition was a control group without an imagination exercise.

After the imagination exercise, participants were asked to guess the probability (from 0%, impossible to 100%, definitely) of encountering a COVID-positive person in a hypothetical group of people from their area. They guessed the risk probabilities for group sizes ranging from 5 to 500 people.

Using up-to-the-minute county-level COVID-19 statistics, the researchers then gave participants feedback on whether they had been over-estimating or under-estimating their risks of these activities.

After finishing the imagination exercise and the risk guessing game, the participants again reported their attitudes about the riskiness of the 15 everyday activities (such as dining inside a restaurant or exercising at a gym). The intervention worked: Those who overestimated their risks thought better of 12 of the 15 activities; those who underestimated their risks were more wary of the 15 activities—but grocery shopping was apparently non-negotiable.

The group that imagined scenarios about real people had the most lasting attitude change when measured one to three weeks later.

"What do these risk numbers actually mean right now?" said Shabnam Hakimi, who co-led the project with Sinclair during a postdoctoral fellowship at Duke. "You can make it stick with context and personally [relevant information](#)."

The study was "kind of an intense version of many of the decisions we face, that are applicable to any kind of choice you make," Hakimi said. The intervention's design is related to research by Duke professors Alison Adcock, Gregory Samanez-Larkin, and Roberto Cabeza on motivational states in the brain that make it easier for people of all ages to learn and remember.

"This is a great example of how discoveries we make while trying to understand the basic workings of the human brain can give us new tools to help us live better lives," said co-author Alison Adcock, associate professor of psychiatry and behavioral sciences and director of Duke's Center for Cognitive Neuroscience. "Even for problems that might — at first glance — seem unrelated to the specific scientific questions we start from."

In a companion paper appearing in *Nature Aging*, the researchers single out one group of participants, the older people, who responded even better to the personal intervention than other subjects. "Aging adults think about positive information differently and value personal scenarios more," Hakimi said. "And that's exactly what we found."

Older people tend to put even more stock in their relationships and friendships, and it's quite possible that the exercise of imagining the people they know come to harm was even more persuasive for this group, Hakimi said.

"The personalized imagination exercise worked better than just hearing the numerical statistics for older people," said co-author Gregory Samanez-Larkin, associate professor of psychology and neuroscience. "This highlights the importance of tailoring public health messages to specific audiences."

"Right now, the approach typically involves giving people statistics about case numbers and things like that without contextualizing it," Sinclair said.

"And we think that's kind of doing it a disservice because we're not giving people enough information to understand how it actually applies to their own lives."

"If we pair the numerical risk information with that context created by the imagination exercise, we think that will be more effective to help people understand risk and think about how it applies to their own lives," Sinclair said.

"The ongoing project extension with Georgia Tech and the CDC is especially exciting," Samanez-Larkin said. "This research suggests that we need to better humanize data dashboards."

"It's not about telling them what to do, it's about giving them the tools to decide what to do," Hakimi said.

**More information:** Alyssa H. Sinclair et al, Pairing facts with imagined consequences improves pandemic-related risk perception, *Proceedings of the National Academy of Sciences* (2021). [DOI: 10.1073/pnas.2100970118](https://doi.org/10.1073/pnas.2100970118)

Alyssa Sinclair et al, Imagining a Personalized Scenario Selectively Increases Perceived Risk of Viral Transmission for Older Adults, *Nature Aging* (2021). [DOI: 10.1038/s43587-021-00095-7](https://doi.org/10.1038/s43587-021-00095-7)

Data Dashboard: [covid19risk.biosci.gatech.edu](https://covid19risk.biosci.gatech.edu)

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